



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,436	09/17/2003	Teruo Fujii	15162/06180	4519
24367	7590	11/25/2008		
SIDLEY AUSTIN LLP 717 NORTH HARWOOD SUITE 3400 DALLAS, TX 75201			EXAMINER HYUN, PAUL SANG HWA	
			ART UNIT	PAPER NUMBER
			1797	
			MAIL DATE	DELIVERY MODE
			11/25/2008 PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/664,436

**Applicant(s)**

FUJII ET AL.

**Examiner**

PAUL S. HYUN

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-8,10-12,14-17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-8,10-12,14-17 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 September 2008 has been entered.

Claims 1-3, 5-8, 10-12, 14-17 and 19 are currently pending. Applicant amended claims 1, 6, 10 and 15.

Independent claims 1, 6, 10 and 15 recite the limitation "a member for positioning the pump unit and the channel unit". It should be noted that this constitutes a means plus function language that invokes 35 U.S.C. section 112 6<sup>th</sup> paragraph. Although Applicant indicated in the Remarks that the claimed means corresponds to the structure described in paragraphs [0087]-[0096] of the Specification, the Specification does not explicitly indicate that the structure described in paragraphs [0087]-[0096] of the Specification corresponds to the claimed means. Consequently, the claim limitation will not be interpreted in accordance 35 U.S.C. section 112 6<sup>th</sup> paragraph.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **1, 2, 5, 6, 7, 10, 11, 14-16 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouellet et al. in view of Zanzucchi et al. (US 5,846,396) and Dubrow et al. (US 6,251,343 B1).

Ouellet et al. disclose a microfluidic apparatus (see Fig. 1). As shown from top to bottom in Figure 1, the apparatus comprises a channel unit 132, and a pump unit comprising two layers (a sheet-like member and a pump portion) that are positioned with respect to each other by a bonding means (see lines 55-60, col. 3). The channel unit 132 comprises a second joint surface 116, and a plurality of second channel openings to the second joint surface 116. The sheet-like member of the pump unit comprises a first joint surface in contact with the second joint surface 116 of the channel unit 132, a plurality of through-holes, and a channel network etched onto the surface of the first joint surface such that both ends of the channel network are open to the first joint surface. The pump portion of the pump unit is attached to the bottom of the sheet-like member. The reference further discloses that each unit can be made from PDMS (see line 40, col. 3), and it is well-known in the art to incorporate micropumps in such devices (see line 22, col. 12). The layers can be thermally bonded (see lines 57, col. 3).

The device disclosed by Ouellet et al. differs from the claimed invention in that Ouellet et al. do not explicitly disclose the location of a pumping mechanism relative to the device. Ouellet et al. also do not disclose that the units can be detachably joined.

With respect to the location of the pumping mechanism, Zanzucchi et al. disclose a micropump for facilitating the movement of fluid within a microfluidic channel wherein the micropump is disposed within the channel (see claim 19). In light of the disclosure of Zanzucchi et al., it would have been obvious to one of ordinary skill in the art to position the micropump disclosed by Ouellet et al. within the network of channels to optimize the pumping ability of the micropump.

With respect to the detachable joining of the units, Dubrow et al. disclose a microfluidic device comprising a plurality of layers made from PDMS (see line 65, col. 3). The attachment and the alignment of the layers can be facilitated by providing alignment pins on one layer and corresponding holes in the mating layer (see lines 18-21, col. 10). In light of the disclosure of Dubrow et al., it would have been obvious to one of ordinary skill in the art to attach the layers of the device disclosed by Ouellet et al. using alignment pins/holes instead of a thermal adhesive so that the device can be disassembled for cleaning.

Claims **3, 8, 12 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouellet et al. in view of Zanzucchi et al. and Dubrow et al. as applied to claims 1, 2, 5, 6, 7, 10, 11, 14-16 and 19 and further evidenced by Wikipedia.

None of Ouellet et al., Zanzucchi et al., and Dubrow et al. explicitly disclose that PDMS is translucent. However, Wikipedia discloses that PDMS is optically clear.

***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL S. HYUN whose telephone number is (571)272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797

/Paul S Hyun/  
Examiner, Art Unit 1797